

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application.

1- 22. (Canceled)

23. (New) A method for inducing at least one site directed double-stranded break in the DNA of an organism comprising:

(a) providing a cell of said organism containing at least one Group I intron encoded endonuclease recognition site at a location in the DNA of the cell,

(b) providing said Group I intron encoded endonuclease to said cell,

whereby said Group I intron encoded endonuclease cleaves said Group I intron encoded endonuclease site at the location in the DNA of the cell.

24. (New) The method of claim 23, wherein the site is an I-SceIV site.

25. (New) The method of claim 23, wherein the site is an I-CsmI site.

26. (New) The method of claim 23, wherein the site is an I-PanI site.

27. (New) The method of claim 23, wherein the site is an I-SceII site.

28. (New) The method of claim 23, wherein the site is an I-CeuI site.

29. (New) The method of claim 23, wherein the site is an I-PpoI site.

30. (New) The method of claim 23, wherein the site is an I-SceIII site.

31. (New) The method of claim 23, wherein the site is an I-CreI site.

32. (New) The method of claim 23, wherein the site is an I-TevI site.

33. (New) The method of claim 23, wherein the site is an I-TevII site.

34. (New) The method of claim 23, wherein the site is an I-TevIII site.

35. (New) The method of claim 23, wherein the site is an I-SceI site.

36. (New) The method of claim 23, wherein said method further comprises providing to said cell

a plasmid comprising a DNA sequence homologous to the sequence of the chromosome, which allows homologous recombination, and

a modified sequence,

wherein said Group I intron encoded endonuclease cleaves the Group I intron encoded endonuclease recognition site,

whereby said cleavage promotes the insertion of said modified sequence into said DNA of said cell at a specific site by homologous recombination.

37. The method of claim 23, wherein said Group I intron encoded endonuclease cleaves the DNA at a unique location in the genome.

38. (New) The method of claim 23, wherein said Group I intron encoded endonuclease recognition site is located between two DNA direct repeats,

wherein said Group I intron encoded endonuclease cleaves the Group I intron encoded endonuclease recognition site,

whereby said cleavage promotes the recombination between the two direct repeats leading to the deletion of one repeat and sequences between the repeats.

39. (New) The method of claim 38, wherein said sequences between the repeats comprises a selectable marker.